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14 May 2007

Mr. Timothy R. O'Brien
California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Subject: Tentative Cease and Desist Order
Woodbridge Winery
K/J 030123*04

Dear Mr. O'Brien:

This letter is submitted by Kennedy/Jenks Consultants (Kennedy/Jenks) on behalf of the Constellation Wines Woodbridge Facility in Acampo, California (Woodbridge) in response to the Notice for Tentative Cease and Desist Order for R. M. E., Inc. Woodbridge Winery dated 16 March 2007 (Tentative CDO).

General Comments

Woodbridge is in the process of designing a state of the art, multi-million dollar process water treatment system to improve the quality of process water that is discharged from the winery. The conceptual plan for the treatment system was presented to the California Regional Water Quality Control Board (CRWQCB) in a Report of Waste Discharge (ROWD) dated 31 July 2006. Woodbridge met with CRWQCB staff on 20 December 2006 to discuss the plan and begin a dialogue to address questions from both staff and Woodbridge.

During the meeting staff indicated that an enforcement order would be necessary to move the project forward. In order to continue moving the project forward, Woodbridge agreed to work with staff to develop an appropriate order for the Facility. Staff felt that a CDO was the most appropriate order and issued the Tentative CDO on 16 March 2007.

Woodbridge appreciates staff's consideration of this project and is committed to work with the CRWQCB to develop a project that is both environmentally and economically sustainable. Woodbridge met with staff again on 12 April 2007 to discuss the Tentative CDO. This letter presents Woodbridge's comments and responses to general discussions that were held at the meeting on 12 April 2007 as well as responses to specific items in the Tentative CDO. General discussion items from the meeting are presented first, under the General Discussion heading and specific items in the Tentative CDO are addressed under the Response to Findings and Response to Orders headings.

Two copies of the Tentative CDO are enclosed. One copy includes Woodbridge's requested changes marked using track-changes. The other is a copy with the track-changes accepted.

General Discussion

Background Groundwater

The definition of background groundwater quality is discussed in the Tentative CDO and was discussed extensively in the meeting with staff on 12 April 2007. We understand that staff does not agree with the proposed ambient groundwater calculations presented in the Groundwater Characterization Report that was submitted to the CRWQCB on 28 April 2006. The Tentative CDO instead suggests the installation of a monitoring well at cone penetrometer test (CPT)-1 to characterize background groundwater quality.

We agree that CPT-1 could be a location for a groundwater monitoring well, potentially providing some additional information on background/ambient groundwater conditions, however, Woodbridge does not own the land where CPT-1 was installed. The property owner agreed to allow Woodbridge to install a CPT for characterization purposes but will not allow a permanent monitoring well to be installed. MW-10 was installed at the furthest upgradient location owned by Woodbridge but is still within the limits of a land application area.

Additionally, confounding factors such as the presence of high quality river water (the Mokelumne River) that recharges groundwater and surrounding agricultural practices make it difficult – if not impossible – to define a meaningful background groundwater quality for the site.

Moreover, as explained in the Groundwater Characterization Report, there is lengthy time-lag between land application and any associated groundwater impacts. Therefore, even if a meaningful background groundwater quality could be identified, it would not provide a useful feedback loop for adjusting land application practices to protect groundwater.

For all of these reasons, we have developed an approach to verifiably prevent impacts to groundwater quality without the need for definition of background groundwater quality.

First, with the proposed improvements to process water treatment and management, Woodbridge plans to generate treated process water that is similar to or better in quality than irrigation water used in the area. The land application area would then be farmed in a manner consistent with best agricultural practices for farms in the region and throughout the Central Valley. Practices such as double cropping, sprinkler irrigation and careful irrigation scheduling to minimize leaching will be used by Woodbridge to manage the land application area in a manner that is protective of groundwater.

A preliminary assessment of available water quality data in the area indicates that the process water could be treated to irrigation water quality. However, Woodbridge is in the process of determining representative irrigation water quality used in the area. The irrigation water quality

assessment will be presented in a Site Assimilative Capacity Plan that will be submitted on 15 March 2008. In the event Woodbridge is not able to generate treated process water that is similar to irrigation water, treated process water would be land applied at the appropriate site assimilative capacity consistent with the planned cropping. Assimilative capacity refers to the capacity of the site to receive salt without statistically significant negative impacts to groundwater. Therefore site assimilative capacity takes into account both crop uptake and soil storage.

For reference, Dr. Don Horneck, PhD, an Extension Agronomist with the Oregon State University, provides a salt uptake rate of 2,350 pounds per acre per year (lb/ac/yr) for alfalfa at a yield of ten tons per acre. For grass hay, Dr. Horneck provides a salt uptake of 1,120 to 2,400 lb/ac/yr at a yield of 8 tons per acre (Horneck, 2001). Also, the California League of Food Processors (CLFP) Manual of Good Practices for Land Application of Food Processing/Rinse Water (CLFP, 2007) provides a salt uptake rate of 759 lb/ac/yr for Barley to 2,093 lb/ac/yr for alfalfa. These quoted uptake rates are for single crop harvesting. The Woodbridge land application plan includes double cropping portions of the land application area to a) provide winter ground cover for irrigation and b) increase the salt and nutrient uptake of the site. Published salt uptake rates for double cropping scenarios are not available. Woodbridge proposes to estimate salt and nitrogen removal under double cropping to be less than the sum of two crops. It is a reasonable conservative assumption that the summer crop will remove constituents at published rates and the second (winter) crop will remove one half of published rates.

To assess the effectiveness of the loading rates and the site assimilative capacity, Woodbridge then proposes to conduct regular soil sampling and analysis in the land application areas. In concept, our plan is to (1) identify and monitor the appropriate horizon that is not impacted by salt loading and (2) adjust land application and cropping practices to assure that horizon is safely separated from groundwater. As a control, Woodbridge proposes to set aside a plot of appropriately sized land north of Woodbridge Road, where process water has never been applied, to collect what would equate to background soil samples. Process water would not be applied to the specified plot of land in order to preserve an area for characterizing natural changes to the soil. Results of the control samples will show that irrigated land, whether irrigated with groundwater, surface water, or treated process water, has an assimilative capacity. These data will be valuable to both Woodbridge and the CRWQCB in evaluating land application practices. Details of the assimilative capacity specific to the Woodbridge site, including the proposed cropping, will be presented in the Site Assimilative Capacity Plan mentioned earlier. The plan will also outline an appropriate monitoring program for assessing the impact of the land application practices.

Existing Ponds

The existing ponds are located within the currently defined 100-year floodplain. Improvements were made to the levee separating the ponds and the Mokelumne River in 1992. At that time the Army Corps of Engineers told Woodbridge that the levee could not be raised above the

100-year floodplain level. Therefore, the levees were raised to within six inches of the 100-year floodplain elevation.

Recently, the Department of Water Resources (DWR) issued a Request for Qualifications (RFQ) for floodplain delineation and floodplain management activities for the State of California's floodplain mapping and floodplain management programs in the Central Valley. The RFQ was published on 22 February 2007 and the contract duration is anticipated to be through July 2012. The DWR study will evaluate the hydraulics and hydrology of the Central Valley for use in floodplain mapping and implementation of floodplain management programs. We understand that the CRWQCB will require the ponds to be moved out of the 100-year floodplain; however, we request to continue to use the existing ponds until the findings of the DWR study are made available. The proposed treatment system will likely obviate the need to use the existing ponds and therefore, based on the findings of the DWR study, Woodbridge will evaluate the most appropriate use of the pond area.

Reports/Deliverables

Given Woodbridge's ongoing efforts to keep the CRWQCB staff informed of its activities and to comply with the conditions of the existing Waste Discharge Requirements, Woodbridge questions whether the number of documents that the Tentative CDO requires to be prepared and submitted over the next three years is warranted. We believe the information requested in some of the reports pertaining to construction of the treatment system could be more effectively communicated in progress meetings with staff rather than preparing lengthy reports. Meetings could be a more interactive and informative method for discussing progress towards the agreed-upon objectives. Meetings could also provide Woodbridge with immediate feedback from staff and would therefore reduce staff's burden to review and comment on lengthy written reports on such a frequent basis, as proposed in the Tentative CDO.

The ROWD proposed a list of deliverables to the CRWQCB pertaining to the phased design of the treatment system. Those deliverables are intended to keep the CRWQCB informed of the design progress of each phase as the project moves forward. However, in addition, staff has requested several treatment effectiveness reports to be submitted following completion of each item. We propose instead to include regular updates in quarterly progress reports and meetings on treatment effectiveness. The updates provided in the quarterly progress reports will provide the CRWQCB with assurance that Woodbridge is making progress towards completion of the project.

Woodbridge has made its best effort to propose intermediate completion dates for various components of the treatment system. However, with weather delays and common situations encountered during construction, such as material availability, Woodbridge requests that the Executive Officer be granted the authority to modify the schedule for deliverables upon reasonable cause. Requests pertaining to individual orders are outlined in the Response to Tentative CDO Orders section of this letter.

Status of Source Control and Water Conservation

Woodbridge has been investigating opportunities to reduce the use of water and chemical salts. Improved efficiencies and changing winery practices has resulted in more efficient water use and a dramatic decrease in salt use.

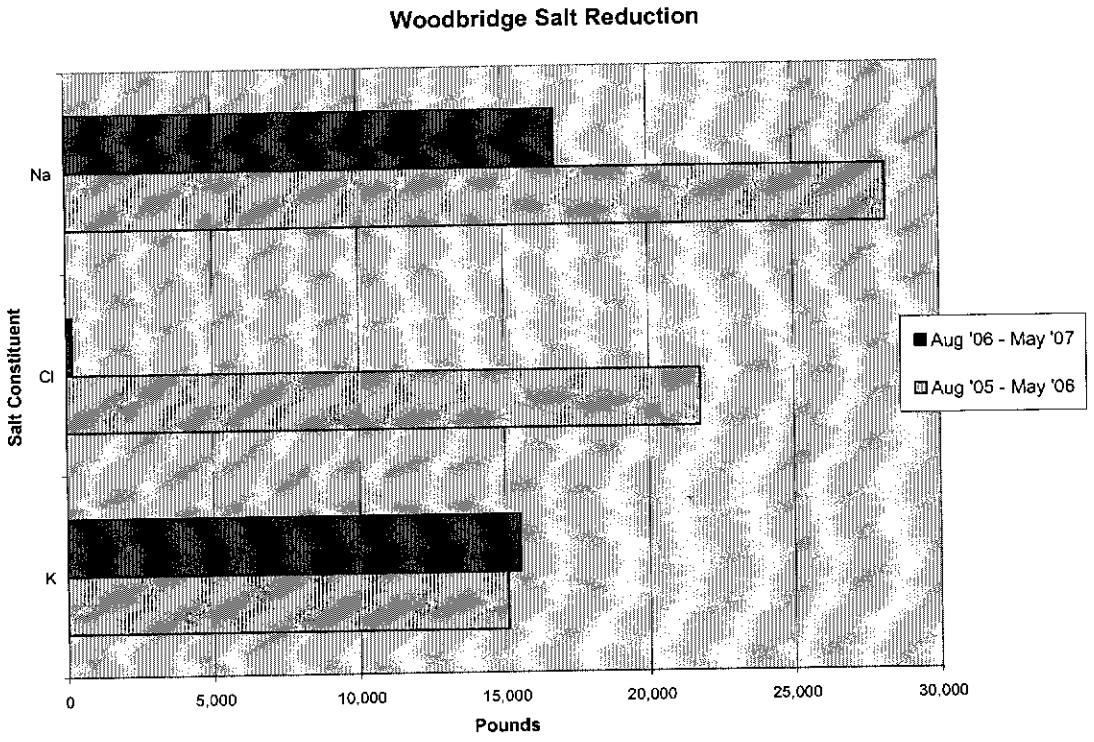

Figure 1. Salt Reduction Effects of the Elimination of Chlorinated Cleaners and Substitution of Potassium-based Cleaners at Woodbridge

A comprehensive source control and water conservation study was initiated in July 2006. Sodium, chloride, and potassium where found to comprise the majority of chemical salt constituents used in, and discharged from, the winery. Figure 1. summarizes the change in use of these salts prior to and after the 2006 study. Figure 1 shows the effect of converting to potassium-based products and the decrease in sodium and chloride containing chemicals. Potassium is an essential plant nutrient and will be taken up by the crops grown in the land application area.

Woodbridge will continue to evaluate winery sanitation, operation and maintenance processes to identify and implement opportunities to further reduce the use of chemicals containing inorganic salts that are not beneficial to crops such as sodium and chloride.

The following changes have been made at Woodbridge to reduce the amount of chemicals that are used:

- Converted to potassium based cleaning chemical ChemClean 440K (potassium hydroxide based cleaner) from ChemClean 440 (sodium hydroxide based cleaner).
- Eliminated use of chlorinated tri-sodium phosphate (CTSP) and chlorine bleach, substituted tri-sodium phosphate (TSP)
- Converted to potassium chloride water softener regeneration salt rather than sodium chloride.
- Reduced water softener regeneration cycles. The Facility has been able to reduce the amount of potassium chloride used to regenerate the water softeners by 57% since 2004.
- Continued use of ozone in lieu of chemical salts for sanitation in some applications. Ozone has been used for sanitation of barrels and some tanks for several years. The Facility is assessing whether the ozonation system can be expanded to function in other areas where chemicals are used for sanitation.

Figure 2 (below) compares Woodbridge winery water use and crush volume and shows that water use per ton of grapes processed has decreased each year since 2003.

In 2006 Woodbridge constructed a Rotovac pump recirculation system. The recirculation system was constructed to capture, cool, and reuse water that is used to provide a vacuum seal for the pumps associated with the Rotovac filter.

As part of Phases 2 and 3 of the process water treatment system development, opportunities for treated water reuse will be thoroughly explored. Reuse of up to five million gallons per year of treated winery process water for cooling tower water make-up is planned.

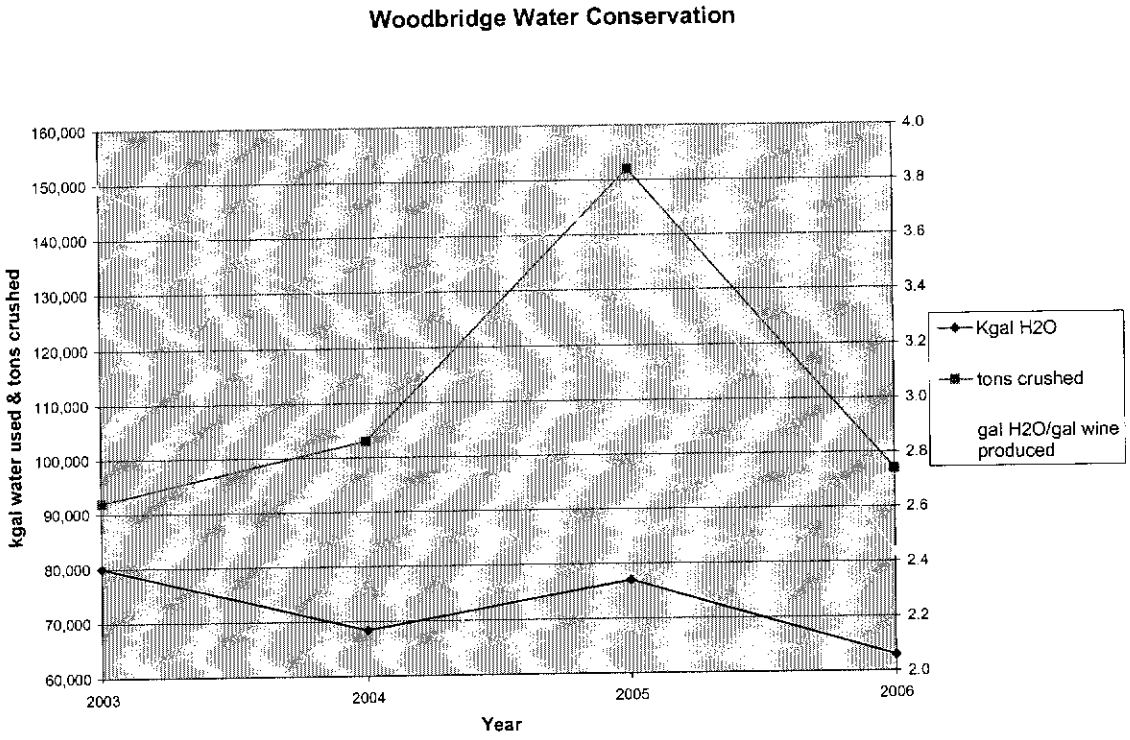

Figure 2. Effects of Woodbridge Water Conservation Measures

Response to Tentative CDO Findings

Finding 5. Woodbridge recently removed 15 +/- acres of vineyards in preparation for the construction of Phase I improvements.

Finding 6. Crush typically occurs from August (not September) through October/November. The reference in the Report of Waste Discharge, page 9 is incorrect and should read, "...during the crush season (August through October and sometimes into November)".

Finding 7. Distillation was discontinued in approximately 1977. Shortly thereafter the still was dismantled and sold. We request that the Finding be revised to indicate that Woodbridge Winery never operated the still and that all distilling operations were conducted by the former owners.

Also, although detailed records of remedial activities to reduce the concentration of waste constituents in the stillage pond are not available, the area is capped with the warehouse building essentially minimizing the potential for mobilizing any remaining pond residuals.

Finding 10. The Groundwater Characterization Report indicated there are elevated concentrations of constituents in downgradient wells compared with upgradient wells, however due to the presence of the Mokelumne River, the Report did not confirm that the site had caused groundwater degradation. The Groundwater Characterization Report identified *possible* sources of the elevated concentrations such as the former stillage pond, land application areas, and site and neighboring ponds.

Finding 11. Woodbridge does not use wine ion exchange. Therefore, the CDO should be revised to delete "wine treatment ion exchange regeneration brine" from Finding 11.

Finding 12. The daily flow numbers listed in Finding 12 could be taken out of context and lead the reader to believe Woodbridge has significantly more flow violations than actually occurred. We suggest the following table to present the flow variability:

	Minimum (gpd)	Maximum (gpd)	Average (gpd)
Non Crush (December – July)	400	1,052,900	170,000
Crush (August – November)	5,200	657,600	270,000

Note: the maximum non-crush flows are due to heavy rainfall and predominantly represent stormwater.

Finding 13. Please note that the Army Corps of Engineers will not allow the pond levee to be raised above the 100-year flood plain level. Woodbridge did raise the levee in 1992 to the maximum height allowed (six inches below the flood plain level) in order to provide the maximum flood protection.

Finding 18. Studies of rapid infiltration show that total nitrogen reductions and salinity sequestering and storage occur in the soil from cyclic wetting and drying cycles. The statement "Because there is no crop uptake, neither FDS nor total nitrogen is removed from the land application area" should be deleted.

Finding 19. The FDS loading of 3,223 lbs/ac-year is within the range of appropriate loading rates for a double cropping scenario as discussed in the Background Groundwater section of this letter. Therefore, the statement "The FDS loading rate will still exceed typical crop uptake rates and therefore, staff is concerned that the proposed application will not be protective of groundwater" should be deleted.

Finding 20. f. Please add "former" to the stillage pond reference. So, the first sentence would read, "There are no groundwater monitoring wells located in close proximity to the former stillage pond". The CDO should be clear that the stillage pond no longer exists.

Finding 22. Well logs are available for production wells PW-1 and PW-4 but well logs were not found for wells PW-2, and PW-3. Woodbridge plans to properly destroy PW-2 by 31 December 2007.

Finding 24. d. As discussed above, Woodbridge does not own the property where CPT-1 was installed and therefore will not be able to install a monitoring well in that location. Please refer to the discussion of background groundwater earlier in this letter.

Finding 24. e. As noted above and in the Groundwater Characterization Report, there area several possible sources – none of which can be said with certainty to have been a cause – of the elevated concentrations in groundwater. Therefore, Finding 24.e should be modified to add the word "may" in front of "have caused".

Finding 26. The list of correspondence noted in Finding 26 is misleadingly incomplete and should be amended to reflect Woodbridge's responses to the CRWQCB's letters. Also, as noted above, finding a meaningful "background groundwater quality" is problematic, if not impossible, and , even if possible, would not provide a useful feedback loop for adjusting land application practices to protect groundwater. As a result, Woodbridge has proposed an approach that verifiably protects groundwater without the need to define background groundwater quality, and the CDO's statement "...and this Order gives the Discharger one more opportunity to establish background groundwater quality" should be deleted.

Finding 29. The wastewater ponds were present in 1987 and permitted by Order 87-184.

Finding 30. Please rename the column that is currently labeled "Background" to "Upgradient (CPT-1)". The table implies that data from one CPT (CPT-1) can define background groundwater quality and that background has already been defined, which is not the case.

Finding 31. In accordance with its WDR, Woodbridge has consistently reported and discussed any violations in a timely manner. Woodbridge takes the violations seriously, consistently monitors their impact, and has taken corrective measures to eliminate the underlying problems.

Finding 31. a. The flow limit specified in Woodbridge's WDR is for dry weather discharges. Dry weather is not defined in the WDR, however, the State Water Resources Control Board defines wet weather as October 1 though May 31 in the National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001. By negative implication, this would define dry weather as 1 June through 30 September. Applying this definition, there have only been two flow violations from January 2005 through December 2006, i.e., in September of 2005 and 2006.

Finding 31. b. The reported inadequate freeboard was a one time event reported during a time of excessive rainfall (not due to negligent operations). The freeboard was reduced to 1.7 feet, 1.8 feet, and 1.9 feet in three of the four ponds. The fourth pond met the freeboard requirement at 2.1 feet. Freeboard levels returned to 2 feet or more in all ponds within six days. Also, the

WDR specifies that the ponds shall maintain a minimum of two feet of freeboard, except when the Mokelumne River is in a flood condition. The Mokelumne River was in a high flow condition (flooding neighboring properties) at the time of the low freeboard levels.

Finding 31. c. Dissolved Oxygen (DO) levels have been greatly improved as a result of adding aeration to the ponds in August 2006. Low DO concentrations have been consistently reported in the Facility's self monitoring reports. Also, no odor nuisance complaints have been received.

Finding 31. d. The holding time for nitrate analysis was not met in one sampling event due to laboratory error. Woodbridge has discussed the analytical hold times with the laboratory and was assured that the error was an anomaly. Nitrate has been consistently monitored and reported in accordance with the MRP.

Finding 32. The process water system improvement plan identified in the ROWD will be accomplished in three phases as discussed in the meetings on 20 December 2006 and 12 April 2007. The three phases are described below.

Phase	Components	Schedule
Phase I	• Screening for Solids Removal • Equalization • Anaerobic Treatment • Dissolved Air Flotation for Solids Removal • Water Conservation and Source Reduction/Salt Reduction	15 November 2008
Phase II	• Aerobic Treatment • Water Conservation and Source Reduction/Salt Reduction	15 August 2009
Phase III	• Polishing Treatment • Water Conservation and Source Reduction/Salt Reduction • Cropping • Water Reuse	15 August 2010

Finding 34. It is noted that the treatment system proposed by Woodbridge was designed to provide the Facility with the means to operate in a manner that is protective of the environment. Until all three phases of the project are complete, the Facility will be in a transition phase and will not be able to meet all requirements of Order 87-184.

Response to Orders

Order 1. As indicated in the response to Item 34, until Woodbridge completes all phases of the treatment system, the Facility will be in a transition phase and will not be able to meet all the requirements of Order 87-184. Specifically, Woodbridge cannot consistently comply with Discharge Specifications B.2, B.4, and B.7 until the three phases of its groundwater protection project are complete and new WDRs – including a new flow limit (Discharge Specification B.4), set at a level the performance data show is verifiably protective of groundwater – are issued.

Similarly, compliance with Discharge Specification B.2 (note that the reference to Discharge Specification B.1 in the draft Tentative CDO is incorrect) cannot commence until all three phases of the treatment system are completed. Based on recent information regarding design and construction scheduling, the compliance date has been modified to September 2010.

Order 2. As discussed above, further efforts to identify background groundwater quality are unlikely to serve the ultimate objective of adjusting land application practices to protect groundwater. Therefore, further groundwater monitoring wells – and the submittal of a *Groundwater Monitoring Well Installation Workplan* – are not necessary.

Order 3. While the ponds are located within the current 100-year flood plain, (1) DWR is conducting a study that could revise the mapping of the floodplain, and (2) Woodbridge's 3-phase project is likely to eliminate the need for the ponds. Therefore, the CDO should be modified to provide that Woodbridge shall submit a plan and implementation schedule for future use of the ponds within 120 days of DWR's publication of its final report.

Order 4. Based on recent information regarding design and construction scheduling, the anaerobic system operation date has been modified to 15 November 2008.

Order 5. As with Order 2, additional monitoring wells are not proposed and therefore a Groundwater Well Installation Report is not necessary.

Order 6. The information requested by items 6. a through 6. d will be completed with other phases of the project and therefore, a separate Wastewater Source, Flow, and Screening Improvement Report is not needed.

Order 6. a. Source reduction will be accomplished throughout the project. A status of the items will be included with the quarterly status reports required by Order 19.

Order 6. b. Water conservation will be accomplished throughout the project. A status of the items will be included with the quarterly status reports required by Order 19.

Order 6. c. Solids removal will be addressed as appropriate in all phases of the project, as necessary. Initial solids removal is part of the anaerobic treatment design phase. Details of the solids removal will be included with the anaerobic system design, and other phases as necessary.

Order 6. d. Equalization is part of the anaerobic treatment design phase. Details of the equalization will be provided with the anaerobic system design.

Order 7. Based on recently acquired information regarding construction scheduling, the aerobic system design will be provided by 15 March 2008 and operation of the system will commence no later than 15 August 2009.

Order 8. Woodbridge proposes to submit an Assimilative Capacity Plan by 15 March 2008 that will include the Cropping Plan Design and Construction Schedule. Based on recently acquired information regarding construction scheduling, the cropping improvements completion date has been modified to 1 May 2010.

Orders 9, 10, 11, 17, 18. As discussed in the Reports/Deliverables section of this letter, Woodbridge proposes to keep staff informed of the progress of the system through quarterly status reports and the MRP self monitoring reports. Woodbridge request the five reports requested in Orders 9, 10, 11, 17, and 18 be deleted from the CDO.

Order 12. Based on recently acquired information regarding construction scheduling, the polishing treatment design will be submitted by 15 March 2009 and improvements will be completed by 15 August 2010.

Order 13. Based on recently acquired information regarding construction scheduling, the Reuse Plan and Implementation Schedule will be submitted by 15 March 2009 and improvements will be completed by 15 August 2010.

Order 14. Based on Woodbridge's plan to apply treated process water at appropriate agronomic rates and to monitor the effectiveness of the plan with soil borings, a *Background Groundwater Quality and Groundwater Degradation Assessment* Report is not necessary. The Groundwater Characterization Report that was submitted to the CRWQCB on 28 April 2006 presents a summary of all monitoring data as well as a comparison of upgradient data to site monitoring wells.

Order 15. Woodbridge proposes to assess all irrigation and production wells onsite by first testing the water quality of the well. If the water quality meets that of other irrigation wells in the vicinity, it can be deduced that the well is not a vertical conduit. If the water quality in the well is significantly higher than vicinity wells, the well will be video-logged as suggested in Order 15

and a vertical conduit assessment will be made.

Order 16. Based on the revised completion dates for the various components of the project, the Report of Waste Discharge deliverable date has been modified to 1 May 2010.

Order 19. The first quarterly status report is proposed for 1 August 2007 because the Order will not be approved prior to 1 June 2007.

Attachment A. Because we are not proposing to install any additional monitoring wells, Attachment A is not needed.

We appreciate your consideration of our comments and request for modification of the Tentative CDO. Woodbridge is committed to improving its process water management processes while continuing to work cooperatively with the CRWQCB staff. If you have any questions regarding this letter, please contact me at 415-243-2524 or Bob Calvin of Woodbridge Winery at (559) 661-5681.

Very truly yours,

KENNEDY/JENKS CONSULTANTS

Robert S. Chrobak, P.E.
Project Manager

Enclosure

cc: Pamela Creedon, CRWQCB
Wendy Wyles, CRWQCB
Mark List, CRWQCB
Bob Calvin, Constellation Wines
Wendy Garcia, Constellation Wines
Brad Alderson, Woodbridge Winery
Jim Crandell, Woodbridge Winery
Drew Scott, Woodbridge Winery

References

Horneck, D, PhD. 2001. The TDS / Non-volatile Solids Dilemma. Eastern Oregon Reuse Consortium Annual Meeting. Boardman Oregon. September 2001.

California League of Food Processors 2007. Manual of Good Practice for Land Application of Food Processing/Rinse Water. 14 March 2007.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2007-____

CEASE AND DESIST ORDER
REQUIRING
R.M.E., INC.
WOODBRIDGE WINERY
SAN JOAQUIN COUNTY

TO CEASE AND DESIST
FROM DISCHARGING CONTRARY TO REQUIREMENTS

Discharger proposed changes (DPC)

The Regional Water Quality Control Board, Central Valley Region, (hereafter referred to as "Regional Water Board") finds that:

1. R.M.E. Inc. (hereafter known as Discharger) owns and operates a winery at 5950 E. Woodbridge Road, Acampo, San Joaquin County. Treated wastewater is discharged to unlined ponds and then applied to land to irrigate crops.
2. Waste Discharge Requirements (WDRs) Order No. 87-184, adopted by the Regional Water Board on 23 October 1987, prescribes requirements for the discharge of wastewater to land. Ownership information for the facility was updated in Change of Name And/Or Ownership Order No. R5-2005-0062.
3. The Discharger submitted a Report of Waste Discharge (RWD) dated 31 July 2006 to apply for revised WDRs. The RWD proposed significant changes in the facility operations, including new wastewater treatment systems and an increase in wine production.
4. Staff's review of the proposed wastewater system indicated it would not be protective of groundwater quality. Therefore, a Cease and Desist Order (CDO) was necessary to allow the Discharger time to improve the quality of wastewater.

Background

5. The facility is located adjacent to and north of the Mokelumne River. The facility consists of a total of 202-acres. The facility includes office, warehouse, winery buildings, and paved areas; land application areas that are planted in vineyards (~~72~~57-acres) and ~~a~~ land application areas that ~~is~~ are not cropped (30~~14.6~~-acres); and unlined wastewater treatment/storage ponds. The property includes approximately 2,000 feet of river frontage and extends approximately 3,000 feet north from the river to E. Woodbridge Road.
6. The winery crushes 100,000 to 150,000 tons of grapes annually to produce wine. Crush occurs yearly from ~~September~~ August to October/November. Recent crush tonnage is presented in the table below. In conjunction with the increased crush, the Discharger plans to increase bottling operations. Historically, a distillery was operated on site by a former owner.

Year	Units	Gallons Wine Produced	Grapes Crushed
2003	Tons	21,100,659	92,000

DPC

Year	Units	Gallons Wine Produced	Grapes Crushed
2004	Tons	20,677,560	103,000
2005	Tons	20,586,209	152,000
2006	Tons	25,828,042	97,800
Future	Tons	48,000,000	200,000

7. Stillage was discharged to a pond that was located in the southeast area of the winery processing facility. Distillation~~; the RWD does not state when distilling~~ was discontinued in 1977. The pond was abandoned and the area covered with buildings and/or asphalt pavement in the 1970's. Woodbridge winery never operated the still and all distilling operations were conducted by previous owners. There is no record of any remedial activities to reduce the concentration of waste constituents that may exist at the site of the stillage pond when it was closed; however by building a warehouse on top of the former stillage pond, the facility has essentially capped the former pond area.

Regulatory Actions

8. The Regional Water Board began preparation of a *Cleanup and Abatement Order* (CAO) in June 2004 as a result of Regional Water Board staff's review of groundwater conditions at the site. Staff's review indicated waste discharge at the facility has degraded groundwater quality.

9. The impact that wastewater application has had on groundwater quality has been addressed in several documents. They include:

   a. On 8 October 2003 the Regional Water Board transmitted a *Request for Technical Report*. The request was issued for the Discharger to further investigate groundwater conditions at the facility. The request stated that groundwater monitoring wells indicated degradation of groundwater quality by wastewater application.

   b. On 22 June 2004 the Regional Water Board issued a *Draft Cleanup and Abatement Order* (CAO) as a result of the 16 March 2004 *Preliminary Groundwater Evaluation Report* prepared by Kennedy/Jenks Consultants.

   c. On 29 July 2004 a response to the *Draft CAO* was submitted by Kronick Moskovitz Tiedemann & Girard, which stated that issuance of a CAO was inappropriate and offered to enter into a "fully enforceable agreement with the state."

   d. On 8 October 2004 a *California Water Code (CWC) Section 13267 Order for Technical Reports* was issued requiring the Discharger to perform additional studies to characterize groundwater quality, characterize wastewater, and submit an RWD.

10. Staff's review of the 31 July 2006 RWD submitted in response to the *CWC Section 13267 Order* indicated the proposed winery expansion and wastewater system is not protective of groundwater quality. Furthermore, the additional information provided in the Discharger's groundwater quality investigation reports submitted in response to the *CWC Section 13267 Order* have ~~confirmed~~ identified the condition of groundwater degradation and identified~~verified~~ the winery facility ~~as the~~as one of the potential contaminant sources. As a result, staff has prepared this Cease and Desist Order (CDO) to require wastewater system improvements.

DPC

Wastewater Generation

11. Wastewater is generated by tank and equipment wash water (rinse water, clean-in-place solutions, and other activities), general cellar wash water, barrel rinsing, ion-exchange regeneration brine, boiler blowdown, ~~wine treatment ion exchange regeneration brine,~~ wine filtering, bottling wash water, refrigeration activities, and stormwater that falls on processing areas.

12. The facility generally discharges the following flows: ~~approximately 260,000 to 400,000 gallons per day (gpd) of wastewater during most of the year and 460,000 to 700,000 gpd during the crush season.~~

	Minimum (gpd)	Maximum (gpd)	Average (gpd)
Non Crush (December – July)	400	1,052,900	170,000
Crush (August – November)	5,200	657,600	270,000

Note: the maximum non-crush flows are due to heavy rainfall and predominantly represent stormwater.

~~12.~~The combined wastewater stream from all sources contains ~~high~~ concentrations of BOD, total dissolved solids, and organic nitrogen that are typical of California Central Valley wineries.

13. Wastewater is collected and discharged to four unlined facultative ponds operated in series. The ponds are at the south portion of the property, and provide approximately 23-million gallons of storage capacity. The ponds are adjacent to the Mokelumne River; a levee separates the river and ponds but the ponds are not out of the 100-year flood zone. In 1992 Woodbridge raised the levee height but the US Army Corps of Engineers would not allow the levee height to be raised above the 100-year flood plain level. After passing through the ponds, the wastewater is pumped to the land application areas.

14. In 2005, the Discharger applied 82 million gallons of wastewater to the 72-acre land application area and an additional 5 million gallons of wastewater to the uncropped 14.6-acre land application area.

Wastewater Characterization

15. The 1 March 2006 *Process Water Characterization and Process Water Treatment Evaluation Report* prepared by Kennedy/Jenks provided estimated wastewater flow rates and loading rates. To characterize the wastewater, samples were collected from discrete waste streams. Because characterization consisted of grab samples, mathematical calculations resulted in some inconsistent results. For example some "% Total Load" values exceed 100-percent. The Discharger considers the data accurate enough to roughly characterize the wastewater components. A summary of the data is provided below:

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Waste Stream	Flow Rate (gal/year)	BOD	FDS	TKN	NO3-N	TN
Bottling	19,500,000					
lbs/year		472,878	91,886	2,677	119	2,796
% Total Load		20	22	8	20	8
Water Softening	253,858					
lbs/year		0	99,507	0	0	0
% Total Load		0	23	0	0	0
Refrigeration	4,762,500					
lbs/year		2,564	44,595	1,695	784	2,479
% Total Load		0.11	10	5	134	7
Tank Sanitation	5,375,000					
lbs/year		212,009	133,159	2,699	37	2,736
% Total Load		9	31	8	6	8
Barrel Rinsing	5,000,000					
lbs/year		954,930	105,501	9,174	0	9,174
% Total Load		40	25	27	0	27
Filtering	3,065,385					
lbs/year		468,130	63,637	816	70	869
% Total Load		20	15	2	12	3
Total	50,622,794					
lbs/year		2,110,511	538,284	17,061	1,009	18,054
% Total Load		88	126	51	172	53

BOD denotes five-day Biochemical Oxygen Demand. FDS denotes Fixed Dissolved Solids. TKN denotes Total Kjeldahl Nitrogen. NO3-N denotes Nitrate as Nitrogen. TN denotes Total Nitrogen.

16. Based on data provided in the RWD that characterizes wastewater pond effluent (samples collected downstream of the wastewater ponds and upstream of land application) since 2001, the average wastewater concentration of Total Dissolved Solids (TDS) is 1,141 mg/L; the average concentration of Fixed Dissolved Solids (FDS) is 737 mg/L. The data is summarized below:

Yearly Average	Units	TDS	FDS	TKN
2001	mg/L	1,070	707	25
2002	mg/L	1,142	765	22
2003	mg/L	1,226	766	30
2004	mg/L	1,043	672	33
2005	mg/L	1,223	775	38
Average	mg/L	1,141	737	30

Data from Table 6, 31 July 2006 RWD prepared by Kennedy/Jenks Consultants.

Land Application Compliance Issues

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17. The Discharger applies treated wastewater to two locations. The first is a 72-acre land application area that is planted as vineyards. The loading rates for nitrogen, TDS, FDS, and biochemical oxygen demand for the years 2002 through 2005 are presented below. Fixed dissolved solids and nitrogen are applied at rates that significantly exceed the crop uptake capacity. The Western Fertilizer Handbook lists the plant macronutrient uptake potential for grapes to be approximately 365 lbs/ac•year. The nitrogen uptake potential (which is one of the macronutrients) is estimated to be 125 lbs/ac•year. Secondary and trace nutrient uptake rates will increase the plant uptake rate to a minor extent.

Constituent	Units	2002	2003	2004	2005
TN	lbs/acre•year	127	326	428	389
TDS	lbs/acre•year	8,600	14,200	11,700	11,500
FDS	lbs/acre•year	5,700	8,500	7,300	7,200
BOD	lbs/acre•year	24	66	84	55

TN denotes Total Nitrogen. TDS denotes Total Dissolved Solids. FDS denotes Fixed Dissolved Solids. BOD denotes Biochemical Oxygen Demand. Data from table contained in Section 3.5.2 Land Application System of 31 July 06 RWD prepared by Kennedy/Jenks Consultants.

18. The Discharger also applies treated wastewater to the 14.6-acre uncropped land application area. The loading rates for nitrogen, total dissolved solids, fixed dissolved solids, and biochemical oxygen demand for the years 2004 through 2005 are presented below. ~~Because there is no crop uptake, neither FDS nor total nitrogen is removed from the land application area.~~

Constituent	Units	2004	2005
TN	lbs/acre•year	113	134
TDS	lbs/acre•year	3,000	3,600
FDS	lbs/acre•year	1,900	2,300
BOD	lbs/acre•year	20	17

TN denotes Total Nitrogen. TDS denotes Total Dissolved Solids. FDS denotes Fixed Dissolved Solids. BOD denotes Biochemical Oxygen Demand. Data from table contained in Section 3.5.2 Land Application System of 31 July 06 RWD prepared by Kennedy/Jenks Consultants.

19. As a result of proposed wastewater system improvements, source control in the winery, and a planned increase in the size of the land application areas to 95-acres (increased from 86.6-acres), the Discharger believes loading rates will decrease in the future. Table 17 of the RWD presents anticipated future loading rates using a 95-acre land application area: the total FDS loading rate is estimated to be 3,223 lbs/ac•year; the estimated nitrogen loading rate is 40 lbs/ac•year. ~~The FDS loading rate will still exceed typical crop uptake rates and therefore, staff is concerned that the proposed application will not be protective of groundwater quality.~~

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Groundwater Degradation

20. The Discharger submitted a 28 April 2006 *Groundwater Characterization Report* prepared by Kennedy/Jenks Consultants. Groundwater investigations to date have employed groundwater monitoring wells and Hydropunch grab samples:

    a. Groundwater monitoring wells MW-1 through MW-7 were installed in December 2001.

    b. Nine Cone Penetrometer Tests (CPTs) were conducted at the facility between 4 and 7 April 2005. Grab groundwater samples were collected from all CPT holes. CPT holes were grouted after collecting the groundwater samples.

    c. Soil Borings SB-1 through SB-7 were drilled between 10 and 14 October 2005. The depth of the borings varied from 15 feet to 64.5 feet below ground surface (bgs) depending on the depth of first encountered groundwater. Grab groundwater samples were collected from all of the borings. The borings were grouted after collecting the groundwater samples.

    d. Groundwater monitoring wells MW-8 through MW-11 were installed between 3 and 7 October 2005.

    e. A perched groundwater zone was reported at Well MW-8; all the other wells and grab groundwater samples were collected from an unconfined aquifer.

    f. There are no groundwater monitoring wells located in close proximity to the former stillage pond. This Order requires the Discharger to conduct an investigation of the former stillage pond and determine if residual waste constituents are an on-going threat to groundwater quality.

21. Subsurface materials consist of silt/sand mixtures and sand. Groundwater exists at increasing depth further from the Mokelumne River. Close to the river, groundwater exists at 3.5 feet bgs and further from the river, groundwater exists at depths up to 65.5 feet bgs.

22. The facility is served by four production wells (PW-1, PW-2, PW-3, and PW-4). Well PW-2 is presently out of service and will no longer be used. Well PW-2 is located within the area of degraded groundwater quality and is also located generally downgradient of the former stillage pond. No details of the well construction are presented in the RWD or the 28 April 2006 *Groundwater Characterization Report* prepared by Kennedy/Jenks. Because of Well PW-2's location, it might be allowing poor quality shallow groundwater to migrate to deeper groundwater zones. This CDO requires the Discharger to investigate construction details of all production wells, and if appropriate, modify or properly destroy wells to prevent degradation of deeper zone groundwater quality.

23. Groundwater monitoring well samples and Hydropunch grab groundwater samples were collected at the facility to characterize groundwater quality. Average concentrations for selected constituents are presented below. Because there are significant differences in the number of sample events for the wells, the count of data points is presented. For averaging purposes, the detection limit was used when it was presented. If no detection limit was presented but the analyte was not detected, the result was not included in the calculation. Hydropunch samples were collected from CPT borings and only allow one

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grab sample to be collected so a count value is not provided. The position column identifies the location of the sample collection relative to potential on-site waste constituent source areas.

Sample		EC (umhos/cm)	TDS (mg/L)	TKN (mg/L)	NO3-N (mg/L)	SO4 (mg/L)	Cl (mg/L)	Na (mg/L)	Position
MW-1	average	203	60	1.2	1.1	1.8	7.1	11	UPG
	Count	17	18	18	17	2	5	4	
MW-2	average	350	296	1.2	1.1	25	18	10	UPG
	Count	17	18	18	17	5	5	5	
MW-3	average	323	158	2.7	1.1	2.0	27	35	UP
	Count	17	18	18	17	2	5	5	
MW-4	average	985	544	5.1	1.1	1.7	53	63	DGP
	Count	17	18	18	18	2	5	5	
MW-5	average	844	641	0.5	24	70	72	34	DGLA
	Count	17	18	18	18	5	5	5	
MW-6	average	601	476	1.1	10	52	33	32	DGLA
	Count	17	18	18	18	5	5	5	
MW-7	average	702	535	0.9	10	71	32	41	DGLA
	Count	17	18	18	18	5	5	5	
MW-8	average	1541	1060	3.6	7.6	79	54	136	DGLA*
	Count	2	2	2	2	1	1	1	
MW-9	average	1057	740	0.8	8.9	58	75	56	CGLA
	Count	2	2	2	2	1	1	1	
MW-10	average	510	405	0.5	12	53	15	51	CGLA
	Count	2	2	2	2	1	1	1	
MW-11	average	663	510	0.5	13	42	37	47	DGWLA
	Count	2	2	2	2	1	1	1	
CPT-1	4/6/2005	261	190	0.5	3.2	11	4	15	UG
CPT-1 Dup	4/6/2005	286	240	0.5	3.2	12	4	15	
CPT-2	4/6/2005	1110	720	0.6	28.2	78	83	28	DGLA
CPT-3	4/7/2005	1250	780	1.2	0.1	11	72	83	DGLA
CPT-4	4/6/2005	727	490	0.5	17.5	65	17	41	DGLA
CPT-5	4/4/2005	823	590	1.9	9.8	90	30	36	DGWLA
CPT-6	4/7/2005	1210	760	0.6	3.6	39	87	50	DGLA
CPT-7	4/6/2005	917	630	1	16.1	117	38	46	DGLA
CPT-8	4/5/2005	606	410	0.6	9.4	50	18	34	DGWLA
CPT-9	4/5/2005	1050	650	0.9	3.5	33	58	52	DGWLA

EC denotes Electrical Conductivity. TDS denotes Total Dissolved Solids. TKN denotes Total Kjeldahl Nitrogen. NO3-N denotes Nitrate as Nitrogen. SO4 denotes Sulfate. Cl denotes Chloride. Na denotes

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Sodium. Position denotes position of well relative to site features. UP denotes Up Gradient. DGP denotes Down Gradient of Wastewater Ponds. DGLA denotes Down Gradient of Land Application Area. DGLA* denotes Down Gradient of Land Application area – well screened in perched zone. CGLA denotes Partially Cross Gradient of Land Application Area. DGWLA denotes Down Gradient of Winery and Land Application Area.

24. The following groundwater quality observations are presented:

    a. At the facility, groundwater consistently flows away from the Mokelumne River to the north/northwest. The infiltrating river water strongly affects groundwater quality at the facility, providing a continuous supply of high quality (low TDS) groundwater.

    b. Groundwater quality is best in wells located near the Mokelumne River. Wells MW-1, MW-2, and MW-3 consistently have the lowest concentrations of TDS. The average values of TDS in the wells are 60 mg/L, 196 mg/L, and 258 mg/L, respectively. The Mokelumne River TDS concentrations generally range from 20 mg/L to 50 mg/L with only a few concentrations reported over 60 mg/L in the data collected since 1960.

    c. With the exception of the wells described in Subfinding b above, all the other site wells are located downgradient of a waste application area and are therefore not appropriate for use to determine background groundwater quality. However, Wells MW-1, MW-2, and MW-3 may not be representative of groundwater conditions because of the close proximity to the river.

    d. Grab groundwater (Hydropunch) sample from Cone Penetrometer Test (CPT) No. 1, which is located approximately 1,250 feet north of the river and upgradient of any waste application area, contained a TDS concentration of 190 mg/L. The data from the Hydropunch sample may represent conditions closer to the natural mineralization rate of groundwater in the area. ~~This CDO requires the Discharger to install a groundwater monitoring well in the area of CPT No. 1 for background groundwater quality characterization.~~

    e. Groundwater monitoring data obtained since December 2001 indicates that the ponds and land application areas, as well as a historic former stillage pond, may have caused increases in concentrations of TDS, sulfate, chloride, sodium, and nitrogen compounds in groundwater. Therefore, it appears that the Discharger cannot immediately comply with the Groundwater Limitations of Order No. 87-184.

25. The nearby Mokelumne River influences groundwater quality at the facility, as does natural mineralization of groundwater as it travels through soil, waste application, crop fertilization practices, and the depth to groundwater.

26. Despite previous efforts, no agreement on background groundwater quality has been reached ~~and this Order gives the Discharger one more opportunity to establish background groundwater quality~~. The issue of characterizing the background groundwater quality has been well documented. The following correspondence is noted:

    a. The 8 October 2004 *Water Code Section 13267 Order for Technical Reports* prepared by Regional Water Board staff required submittal of a *Groundwater Characterization Workplan* that describes, "...the relationship between the river and underlying shallow groundwater, and the impact of historical wastewater discharge and other discharge practices on underlying shallow groundwater."

b. The 15 February 2005 *Conditional Approval and Request for Addendum* review prepared by Regional Water Board staff after review of the *Groundwater Characterization Workplan* prepared by Kennedy/Jenks stated "The CPT/Hydropunch study is proposed in areas that are downgradient of the wastewater ponds or land application areas. To investigate groundwater quality trends in areas without wastewater ponds, consider performing some sampling in areas not suspected to be impacted by waste application...". In response to the *Conditional Approval and Request for Addendum* on 10 March 2005 Kennedy/Jenks submitted an *Addendum No. 1 to Groundwater Protection Work Plan* that proposed CPT locations farther away from the ponds. On 8 July 2005, Kennedy/Jenks submitted an *Addendum No. 2 to Groundwater Protection Work Plan* that proposed additional CPT and monitoring well locations based on the results of the initial CPT investigation performed as part of the *Addendum No. 1 to Groundwater Protection Work Plan.*

c. The 23 August 2005 *Conditional Approval and Request for Addendum, Addendum No. 2* review prepared by Regional Water Board staff after review of the *Addendum No. 2 to Groundwater Protection Work Plan* prepared by Kennedy/Jenks stated "Consider relocating proposed Well MW-10. It is located at the upgradient edge of a land application area. The data that will be provided from that well will be difficult to interpret. Consider moving the well to an area upgradient of the land application area." The document also stated, "You may implement the workplan at your own risk. If staff determines the scope is incomplete, additional investigation may be required." In response to the *Conditional Approval and Request for Addendum, Addendum No. 2* Kennedy/Jenks submitted a *Response to Comments, Addendum No. 2* dated 21 September 2005 that presented our opinion that the proposed location of MW-10 is optimum for monitoring and that moving it closer to the river would cause it to come under the influence of the Mokelumne River. MW-10 was installed at the farthest updgradient, onsite location possible.

Waste Character and Waste Management Unit Classification

27. Water Code Section 13173 defines "designated waste" to include "[n]on hazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations that exceed applicable water quality objectives or that could reasonably be expected to affect beneficial uses of waters of the state as contained in the appropriate state water quality control plan."

28. Based on the waste characterization data and groundwater data summarized herein, it appears that the combined waste stream discharged from the facility to the wastewater pond system may be a designated waste due to concentrations of total dissolved solids, sulfate, chloride, sodium, and nitrogen that appear to exceed the applicable water quality limits.

29. Unlined wastewater ponds were present and their operation permitted in accordance with Order No. 87-184~~are used~~ to treat and store liquid waste that may be designated. ~~However, pursuant to~~Subsequently California Code of Regulations Title 27, Section 20210, stipulated such waste can only be discharged to a Class I or Class II surface impoundment equipped with engineered lining and leachate collection and recovery

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systems. Therefore, continued discharge to the wastewater ponds ~~appears to~~may be a violation of California Code of Regulations Title 27, Section 20210~~Order No. 87-184~~. However, the Discharger cannot immediately cease the discharge of the waste and this Order provides the Discharger time to make facility improvements such that designated waste is no longer discharged.

30. Water Quality Objectives (WQOs) listed in the Basin Plan include numeric WQOs, (e.g., State drinking water Maximum Contaminant Levels (MCL)) that are incorporated by reference, and narrative Water Quality Limits (WQLs), including the narrative toxicity objective and the narrative taste and odor objectives for surface and groundwater. Chapter IV of the Basin Plan contains the *Policy for Application of Water Quality Objectives*, which states:

> *Where compliance with narrative objectives is required (i.e., where the objectives are applicable to protect specified beneficial uses), the Water Board will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.*"

The numerical limits for the constituents of concern listed in the following table implement the Basin Plan WQLs and compare those values to concentrations observed in groundwater at the facility.

Analyte	Units	Minimum Value	Maximum Value	~~Background~~ [4] Upgradient (CPT-1)[1]	WQLs
TDS	mg/L	60	1,060	215	450 [2]
EC	umhos/cm	203	1541	273	700 [2]
SO_4	mg/L	1.7	117	11.5	250 [3]
Chloride	mg/L	4.0	87	4	106 [2]
Sodium	mg/L	9.8	136	15	20 [4]
TKN	mg/L	0.5	5.1	0.5	NA
NO_3-N	mg/L	0.1	28.2	3.2	10 [5]

TDS denotes Total Dissolved Solids. EC denotes Electrical Conductivity. NO_3-N denotes Nitrate as Nitrogen. WQL denotes Water Quality Limit.

[1] ~~Background~~ Upgradient calculated by averaging the value and duplicate values collected at CPT-1. [2] Agricultural Water Quality Goals. [3] Secondary Maximum Contaminant Level (Drinking Water). [4] USEPA Health Advisory (SNARL). [5] Primary Maximum Contaminant Level (Drinking Water).

Other Violations of the WDRs

31. Staff reviewed the Discharger's self-monitoring reports from January 2005 through December 2006. The following violations were noted:

    a. The flow limit was exceeded in ~~five~~ two months. The flow meter was not operational ~~for an additional four months~~from February through April 2005 and for five days in December 2005.

    b. Inadequate wastewater pond freeboard was reported in one month.

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c. The wastewater ponds did not posses at least 1.0 mg/L of dissolved oxygen in every month during the time period examined.

d. The hold time for one groundwater sample was exceeded for a nitrate as nitrogen analysis.

Wastewater Treatment System Improvements

32. The 31 July 2006 RWD described a wastewater improvement plan. A recent schedule has been provided by the Discharger. The plan consists of the following items:

Phase	Components	Proposed Schedule
Phase I	• Screening for Solids Removal • Equalization • Anaerobic Treatment • Dissolved Air Flotation for Solids Removal • Water Conservation and Source Reduction/Salt Reduction	15 November 2008
Phase II	• Aerobic Treatment • Water Conservation and Source Reduction/Salt Reduction	15 August 2009
Phase III	• Polishing Treatment a. Water Conservation and Source Reduction/Salt Reduction b. Cropping • Water Reuse	15 August 2010

~~Improvement~~	~~Features~~	~~Benefit~~	~~Schedule~~
~~Source Reduction~~	~~Goal of up to 25 percent reduction by use of best management practices.~~	~~Reduce constituent load and process water volume to be treated.~~	~~Evaluation in 2006 and 2007.~~
~~Water~~	~~Goal of up to 25 percent~~	~~Reduce process water~~	~~Evaluation in 2006~~

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Improvement	Features	Benefit	Schedule
Conservation	reduction by use of best management practices.	volume to be treated.	and 2007.
Solids Removal	Coarse screening for particles greater than 0.25-inch.	Reduce constituent load to be treated.	Not specified.
Equalization	Use tank or reservoir to equalize flow rates.	Consistent quantity and quality of process water contributes to efficient treatment.	Not specified.
Anaerobic Biological Treatment	Adaptable to low or high flow rates. Reduce BOD and TSS by up to 90-percent. Reduce total nitrogen by up to 25-percent. Accomplish some conversion of total nitrogen to ammonia.	Reduce constituent load more cost-effectively than aerobic treatment alone.	To be designed and constructed in 2007.
Aerobic Biological Treatment	Reduce BOD by up to 90-percent. Reduce TSS by up to 90-percent. Reduce total nitrogen by up to 50-percent.	Polish water and reduce constituent load for reuse.	Designed 2007, constructed 2008.
Polishing	Use of wetlands, filtration, and/or storage.	Polish water for reuse and improve aesthetic value.	Construct polishing as needed 2009-2010.
Optimal Cropping	Replace vineyards with more appropriate crops for water and nutrient uptake.	Much greater uptake of treated water and nutrients.	Designed 2007, planting 2008.
Reuse for Irrigation and Winery Needs	Specific uses will depend on the final design.	Use water for beneficial uses to minimize source water pumping and maximize disposal options.	Implement polishing in 2008-2009.

Reference: Implementation Schedule, RWD Section 8. Improvement, Features, Benefit information from RWD Table 15.

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33. The Discharger proposes the following list of deliverables to allow the Regional Water Board to review the wastewater design and construction. Each deliverable will include a description of the selected design, design criteria, process flow diagram, a proposed monitoring and reporting plan for the system, and a schedule of the next expected deliverable. The deliverables consist of the following:

    a. Anaerobic Treatment System Final Design and Construction Schedule.

    b. Aerobic Treatment System Final Design and Construction Schedule.

    c. Cropping Plan Design and Implementation Schedule.

    d. Polishing Treatment Design and Construction Schedule.

    e. Reuse Plan and Implementation Schedule.

Regulatory Considerations

34. As a result of the events and activities described in this Order, the Regional Board finds that the Discharger has discharged waste in violation of the WDRs, and will not be able to fully comply with Order No. 87-184 until certain technical studies and facility improvements are completed. It is appropriate to impose a reasonable schedule for compliance with ~~all~~ requirements of Order No. 87-184.

35. The Regional Water Board's Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan) designates beneficial uses, includes water quality objectives to protect the beneficial uses, and includes implementation plans to implement the water quality objectives.

36. Surface water drainage is to the Mokelumne River. The Basin Plan designates the beneficial uses of the Mokelumne River from Camanche Reservoir to the Sacramento-San Joaquin Delta are agricultural supply; water contact recreation; noncontact water recreation; warm freshwater habitat, cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

37. The beneficial uses of underlying groundwater are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

38. Section 13301 of the California Water Code states in part: "When a Regional Board finds that a discharge of waste is taking place or threatening to take place in violation of the requirements or discharge prohibitions prescribed by the regional board or the state board, the board may issue an order to cease and desist and direct that those persons not complying with the requirements or discharge prohibitions (a) comply forthwith, (b) comply in accordance with a time schedule set by the board, or (c) in the event of a threatened violation, take appropriate remedial or preventive action."

39. Section 13267(b) of the California Water Code states: "*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that*

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could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

40. The required technical reports are necessary to assure compliance with WDRs Order No. 87-184 and this Order, and to assure protection of public health and safety. The Discharger owns and operates the facility that discharges the waste subject to this Order.

41. The issuance of this Order is an enforcement action by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act, pursuant to Section 15321(a)(2), Title 14, California Code of Regulations.

42. On _____, in Rancho Cordova, California, after due notice to the Discharger and all other affected persons, the Regional Water Board conducted a public hearing at which evidence was received to consider a Cease and Desist Order.

43. Any person affected by this action of the Regional Water Board may petition the State Water Resources Control Board to review the action in accordance with Section 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, CA, 95812-0100, within 30 days of the date on which the Regional Water Board action took place. Copies of the law and regulations applicable to filing petitions are available at *www.waterboards.ca.gov/water_laws/index.html* and also will be provided upon request.

IT IS HEREBY ORDERED that, pursuant to Sections 13301 and 13267 of the California Water Code, R.M.E., Inc., its agents, successors, and assigns, shall in accordance with the following tasks and time schedule, implement the following measures and identify and implement all improvements required to ensure long-term compliance with WDRs Order No. 87-184 or any superceding permits or orders issued by the Regional Water Board.

Any person signing a document submitted under this Order shall make the following certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my knowledge and on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

~~1.~~**Effective immediately**, the Discharger shall comply with all requirements set forth in WDRs Order No. 87-184, with the exception of Discharge Specifications B.~~1~~2 (groundwater degradation), B.4 (flow), and B.7 (pond dissolved oxygen levels). Compliance with

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Discharge Specification B.~~1~~2 shall commence no later than ~~**30 October 2009**~~**September 2010**.

~~2.~~1. ~~By **31 July 2007**, the Discharger shall submit a *Groundwater Well Installation Workplan* for installation of groundwater monitoring wells to be located near CPT No. 1, the location of the former stillage pond, and any other location(s) the Discharger believes is required to determine background groundwater quality or better characterize the extent of degraded groundwater quality. The wells will establish groundwater conditions in areas impacted by waste disposal and natural background groundwater conditions. The workplan shall be prepared consistent with the attached guidance document, *Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports* and shall contain the information listed in Sections 1 and 2.~~

2. The Discharger is aware that the DWR is evaluating the hydraulics and hydrology of the Central Valley for use in floodplain mapping and implementation of floodplain management programs. Within 120 days of availability of the DWR hydraulics and hydrology study the discharger shall prepare a plan and implementation schedule to prevent process water from being discharged to the Mokelumne River.

~~3.By **1 September 2007**, the Discharger shall determine the flood hazard status of the wastewater ponds. If the ponds are within the 100-year flood hazard zone, the Discharger shall prepare a plan and implementation schedule to prevent wastewater from being discharged to the Mokelumne River. If the ponds can not be protected from the flood zone, the Discharger shall prepare a *Pond Contingency Plan* for handling wastewater during times when the ponds may be inundated.~~

~~4.~~By **1 September 2007**, the Discharger shall submit the *Anaerobic Treatment System Final Design and Construction Schedule*. The schedule shall show that the system shall be in operation by 15 ~~March~~ November 2008.

~~5.By **30 October 2007**, the Discharger shall submit a *Groundwater Well Installation Report* containing the information in Section 3 of Attachment A. Wells used to determine background groundwater quality shall be sampled **monthly** for one year for the constituents listed in the groundwater portion of the Revised Monitoring and Reporting Program (MRP) Order No. 87-184. The monthly data shall be included in the quarterly reports required by Revised MRP No. 87-184. (In addition to the groundwater monitoring required for the other groundwater monitoring wells). After one year of monthly monitoring, all groundwater monitoring wells shall be sampled quarterly.~~

~~6.By **31 December 2007**, the Discharger shall submit a *Wastewater Source, Flow, and Screening Improvement Report*. The report shall describe improvements in equipment and performance of the following tasks:~~

~~a.Source Reduction – The RWD stated a goal of up to 25 percent reduction by use of Best Management Practices (BMPs). The report shall describe the BMPs, the schedule of implementation, and provide direct measurements of the improvements that are observed as a result of BMP implementation.~~

~~b.~~3. ~~Water Conservation – The RWD stated a goal of up to 25 percent reduction by use of BMPs. The report shall describe the BMPs, the schedule of implementation, and provide~~

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~~direct measurements of the improvements that are observed as a result of BMP implementation.~~

~~a. Solids Removal – The RWD stated coarse screening would be installed to screen particles larger than 0.25-inch. The Report shall describe the installation of the screen(s), how the screens are kept from clogging, how screenings are collected, and where they are disposed.~~

~~b. Equalization (flow and waste constituent) – The RWD stated equalization would be implemented to provide a consistent quantity and quality of process water for efficient treatment. The report shall show that equalization measures have been installed and the equalization locations (e.g., before discharge to the sump, land application area, or other process). The report shall present an evaluation of the effectiveness of the equalization and its affect on wastewater quality.~~

~~7.~~4. By **15 ~~January~~ March 2008**, the Discharger shall submit the *Aerobic Treatment System Final Design and Construction Schedule*. The schedule shall show that the system shall be in operation by 15 ~~June~~ August 200~~8~~9.

~~8.~~By **15 ~~January~~ March 2008**, the Discharger shall submit the ~~*Cropping Plan Design*~~*Assimilative Capacity Plan and Implementation Schedule*. The schedule shall show all improvements to cropped areas will be completed by 1 May 200~~8~~10.

~~9. By 1 June 2008, the Discharger shall submit the *Anaerobic Treatment Effectiveness Report*. The report shall present influent and effluent data for all the analytes included in *Revised Monitoring and Reporting Program* (Revised MRP) No. 87-184 and an evaluation of the effectiveness of the anaerobic treatment system.~~

~~10. By 1 August 2008, the Discharger shall submit the *Cropping Plan Implementation Report*. The report shall describe crop status, any harvesting that has occurred to date, the use of the crop, and photographs of the land application area depicting the crop health.~~

~~11.~~5. ~~By 15 September 2008, the Discharger shall submit the *Aerobic Treatment Effectiveness Report*. The report shall present influent and effluent data for all the analytes included in Revised MRP No. 87-184 and an evaluation of the effectiveness of the aerobic treatment system.~~

~~12.~~6. By **15 ~~January~~ March 2009**, the Discharger shall submit the *Polishing Treatment Design and Construction Schedule*. The schedule shall show that improvements shall be constructed by 15 ~~June~~ August 200~~9~~10.

~~13.~~7. By **15 ~~January~~ March 2009**, the Discharger shall submit the *Reuse Plan and Implementation Schedule*. The schedule shall show that improvements shall be constructed by 15 ~~June~~ August 200~~9~~10.

~~14. By 15 January 2009, the Discharger shall submit a *Background Groundwater Quality and Groundwater Degradation Assessment Report*. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary of all monitoring data (including data obtained prior to adoption of this Order) and calculation of the concentration in background monitoring well(s). This determination of background groundwater quality shall be made using the methods described in Title 27, Section~~

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~~20415(e)(10), and shall be based on data from at least 12 consecutive groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare the measured concentration in each compliance monitoring well with the proposed background concentration. The report shall also contain a delineation of degraded groundwater quality. The area of degraded groundwater will be used to identify potential conduit wells as described below. Should the Discharger fail to propose a suitable background groundwater concentration value, Regional Water Board staff will determine the value and document that determination in a memo that will be distributed within a reasonable time after submittal of the report described above.~~

~~15.~~8. By **1 May 2009**, the Discharger shall submit a *Potential Conduit Report* on all ~~the construction of inactive Well No. PW-2 and all other~~ onsite wells ~~located within the degraded groundwater plume~~. The report shall include water quality data and if necessary, construction details, an evaluation of well conditions, and an evaluation of the potential for the wells to act as conduits for degraded quality groundwater to migrate to deeper aquifer zones. If construction details are not available, the well construction shall be investigated using a video-log or similar method. If the investigation reveals a potential for any well to act as a conduit, the Discharger shall submit a Well Abandonment Workplan by **31 July 2009** and a Well Destruction Completion Report by **29 October 2009**.

~~16.~~By **1 May ~~2009~~2010**, the Discharger shall submit a *Report of Waste Discharge* that presents a sustainable FDS loading rate and source control activities that will result in discharges that will not exceed loading rates and cause groundwater degradation. If the RWD includes loading rates that are higher than values published in reference documents, the results of laboratory or pilot studies can be presented to support alternative loading rates. The RWD must also address improvements to the wastewater storage/treatment ponds. The RWD shall include either a) a design for Class II surface impoundments that comply with Title 27, or b) a design for wastewater source control, treatment, and or segregation that will allow the discharge to comply with State Board Resolution No. 68-16. If the latter is selected, the Report of Waste Discharge shall demonstrate that such compliance will be achieved within 180-days.

~~17.~~9. ~~By **15 September 2009**, the Discharger shall submit the *Polishing Treatment Effectiveness Report*. The report shall present influent and effluent data for all the analytes included in *Revised Monitoring and Reporting Program* (Revised MRP) No. 87-184 and an evaluation of the effectiveness of the polishing treatment system.~~

~~18.By **15 September 2009**, the Discharger shall submit the *Reuse Plan Effectiveness Report*. The report shall present an evaluation of the effectiveness of the reuse plan and the effect the reuse of wastewater has on the facility wastewater quality and quantity.~~

~~19.~~10. **Beginning 1 ~~June~~ August 2007**, and by the first day of the second month following each calendar quarter **(i.e., by 1 February, 1 May, 1 August, and 1 November each year)**, the Discharger shall submit a progress report describing the work completed to date regarding each of the reporting requirements described in this Order.

In addition to the above, the Discharger shall comply with all applicable provisions of the California Water Code that are not specifically referred to in this Order.

All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, Sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work. The Board hereby authorizes the Executive Officer to adjust the dates in this Order upon reasonable cause.

Failure to comply with this Order may result in the assessment of an Administrative Civil Liability up to $1,000 or up to $10,000 per day of violation, depending on the violation, pursuant to the California Water Code, including Sections 13268, 13350, and 13385. The Regional Water Board reserves its right to take any enforcement actions authorized by law.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on _____.

Discharger Proposed Changes

PAMELA C. CREEDON, Executive Officer

TRO: 3/15/07

~~Attachment A: Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports~~